What Works Clearinghouse
Study Design Classification

To be eligible for WWC review, a study must be a randomized trial, a regression discontinuity design, or a quasi-experiment with equating of pretest differences.[1] The questions and examples below are meant to help WWC staff to classify properly the design of each potentially relevant study.

Is this study a randomized trial?

1. Was random assignment used to place participants into intervention groups?
   - Ideally, the study authors will report specifics about the randomization procedure, including: (a) details about how the assignment sequence was generated (e.g., use of a random number table or generator, coin flip, roll of a die), (b) information about the role of the person who generated the sequence, and (c) methods used to conceal the sequence until participants were assigned to conditions.
   - If the study authors use the term "random assignment" but give no other indication of how the assignment procedure was carried out, assume that the label was properly applied.
   - Occasionally, researchers will use the term "random assignment" when they really mean "random selection." Alternatively, they may use the term "random selection" to mean "random assignment." Coders should examine closely the context of the language used in the report for evidence these types of confusion.
   - Occasionally, researchers will use matching or stratifying *before* randomization in order to minimize group differences on a variable or set of variables. Coders should closely examine studies to ensure that these are classified properly as randomized trials.

2. If a random procedure was not used, were participants placed into intervention groups using a process that was haphazard and functionally random?
   - Examples of haphazard assignment that *might* be functionally random include: alternating by date of birth (e.g., January 5 is placed into group A, January 7 is placed into group B, January 13 is placed into group A, etc.); alternating alphabetically by last name (e.g., Acosta is placed into group A, Aguilera is placed into group B); alternating by the last digit of an identification code (e.g., "evens" are placed into group A, "odds" are placed into group B).
   - Examples of haphazard assignment that are *probably not* functionally random include: (a) birth months January – June placed into group A, birth months July – December placed into group B; (b) participants with a last name beginning with A-M a placed into group A, last names beginning with N-Z are placed into group B; and (c) the first 20 arrivals are placed into group A, the last 20 arrivals are placed into group B (although this one should be evaluated as a regression discontinuity design).
   - Because it is often difficult to tell what is functionally random and what is not, the WWC's MC should weigh in whenever this decision is not clear cut.

[1] The WWC is also considering the feasibility of adding single case experimental research to the list of eligible designs.

An answer of "yes" to either of these questions leads to a categorization of the study as a randomized trial. However, the fact that haphazard assignment was used will be noted in the write up of the study report.

Is this study a regression discontinuity design?

1. If the study is not deemed to be a randomized trial, was a specific pretest cutoff score on a covariate measured before treatment used to place participants in their groups?

2. Could all participants in the study have received the intervention had the cutoff point been set differently?

If the answer to both of these questions is "yes", then the study is a regression discontinuity design.

Is this study a quasi-experiment with equating of pretest differences?

1. Were participants placed into groups on a non-random basis for purposes of delivering the intervention?

2. Were the groups were equated on a pretest (or a proxy of the pretest) of the outcome measure?
   - Equating can be accomplished through:
     - Matching. This involves creating or identifying (intervention and control) comparison groups that "look" similar on a pretest of the outcome measure and across any other characteristics identified in the WWC Review Protocol for each topic. Because matching in this manner is very difficult to do well, the WWC's MC should be consulted when studies using matching are encountered.
     - Statistical equating. This involves using statistical procedures (e.g., ANCOVA) to equate groups on a pretest measure of the outcome.
   - Timing of equating: Groups may be identified and matched before the intervention is implemented, or groups may be identified and matched or statistically equated post hoc through the use of secondary data.
   - Timing of pretest: The pretest may be administered at baseline, or it may be administered quite some time before the intervention was implemented (e.g., collected from achievement testing the previous year).
   - Sample pretested: Under limited conditions the pretest used in equating may come from a preceding cohort of the students or teachers that comprise a larger unit of intervention delivery. For example, this is sometimes seen when the school is the unit of intervention delivery (e.g., a school wide math curriculum) and "baseline" data are used from achievement testing at the school during the year that preceded the intervention's implementation. In this case, the students tested would be in the same grade as the students receiving the intervention, but would be tested the year before the students post tested. Only when the unit of intervention delivery is at the school level or higher is this

approach allowable. The timing and characteristics of the pretest should be noted during coding.

If the answer to both of these questions is "yes", then the study meets the WWC's definition of a quasi-experiment with equating.